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Basic Information

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Faculty |  | | | | | | | |
| Office Hour |  | | | | | | | |
| Contact Details |  | | | | | | | |
| Course Pre-requisites | None | | | | | | | |
| Department offering the course | Computer Science and Engineering | | | | | | | |
| Course Title | Structured Programming LAB | | | | | | | |
| Course Code | CSE 104(Lab) | | Sec |  | Credit | 01 | Term | Fall 2019 |
| Number of Lectures | 0 | Number of Tutorials | | 0 | Number of Practical | 24 | Total | 24 |

Course Details

**1.Course Description**

This is an introductory course in Computer Programming which will introduce the students to the concepts and some techniques of problem solving, algorithm specification and development, programming style, debugging and testing, documentation etc. Multiple programming paradigms will be introduced. However, emphasis will be on imperative programming languages with C being the language of choice in this subject. Students will be expected demonstrate knowledge and understanding of C syntax as well as programming expertise using it.

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**2. Course Objective**

1. The course aims to provide exposure to problem-solving through programming. It aims to train the student to the basic concepts of the C-programming language. This course involves a lab component which is designed to give the student hands-on experience with the concepts that **develop** problem solving and coding skills.

**3. Intended learning outcomes of the course (ILOs)**

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| --- | --- |
| SKILLS | 1. Basic knowledge ofstructured programming terminologies to d**evelop** problem-solving skills, **produce** quality code and **ability** to handle possible errors during program execution. |

**4. Mapping of Course LO and PLO:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Learning Outcome (LO) of the Course** | **Program Learning Outcome (PLO)** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **ILO1** | MJ |  |  |  | MN |  |  |  | MN | MN |  |  |

**5. Contents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ILO** | **Topic** | **Teaching Strategy** | **Assessment Strategy of Los** | **Number of Sessions** |
| 1 | Introduction and Basics | Exercise | Q/A, Test | 2 |
| 1 | Variables, Datatypes, Operators | Exercise | Q/A, Test, Assignment | 2 |
| 1 | Structured Program Development in C: Basic of Flow Chart, Control Statements 1(if, if...else, switch, top-down and stepwise refinement), Program Control: Control Statements 2 (for, do…while, switch, break and continue), Nested Loop, Loop Control Statement( break, continue, goto) | Exercise | Q/A, Test, Assignment | 6 |
| 1 | Introduction to Functions (Math Library Functions, Function Definitions, Function Prototypes and Argument, Recursive functions, References and Reference Parameters, passing arguments to functions and passing arguments by reference | Exercise | Q/A, Test, Assignment | 4 |
| 1 | Introduction to Arrays (Arrays, Declaring Arrays, Examples Using Arrays, Passing Arrays to Functions, arrays of strings), Searching Arrays, Sorting Arrays, Multidimensional Arrays, passing multi-dimensional array directly to function | Exercise | Q/A, Test, Assignment | 4 |
| 1 | Pointers (Pointer Variable Declarations and Initialization, NULL Pointer, Passing Arguments to Functions by Reference with Pointers, Pointer Expressions and Pointer Arithmetic, Arrays of Pointers, Function Pointers), Characters and Strings (String Input, String Manipulation, Comparison Functions, Search Functions, and Memory Functions) | Exercise | Q/A, Test, Assignment | 5 |
| 1 | Final Project Submission |  |  | 1 |
|  |  |  | **Total** | 24 |

**6. A. Assessment Schedule**

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| --- | --- | --- | --- |
| Assessment 1 | Weekly Lab Assessment | Session | Weekly Basis |
| Assessment 2 | Attendance and Class Participation | Session |  |
| Assessment 3 | Lab Viva | Session | Week 6, 12 |
| Assessment 4 | Mid and Final Lab Final | Session | As per ULAB schedule |
| Assessment 5 | Final Project | Session | Week 11 |

**B. Weights of Assessments**

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| --- | --- |
| Assessments | **%(CSE-104)** |
| Attendance and Class Participation | 10 |
| Weekly Lab Assessment | 20 |
| Mid Examination | 20 |
| Final | 30 |
| FINAL Project | 20 |
| Total | 100 |

**C. Grading Policy**

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| --- | --- | --- | --- |
| **Policy** | **Letter Grade** | **Grade Point** | **Assessments** |
| 95% and above | A+ | 4.00 | Outstanding |
| 85% to below 94% | A | 4.00 | Superlative |
| 80% to below 84% | A- | 3.80 | Excellent |
| 75% to below 79% | B+ | 3.30 | Very Good |
| 70% to below 74% | B | 3.00 | Good |
| 65% to below 69% | B- | 2.80 | Average |
| 60% to below 64% | C+ | 2.50 | Below Average |
| 55% to below 59% | C | 2.20 | Passing |
| 50% to below 54% | D | 1.50 | Probationary |
| below 50% | F | 0.00 | Fail |
| -- | I | 0.00 | Incomplete |
| -- | W | 0.00 | Withdrawn |
| -- | AW | 0.00 | Administrative Withdrawal |

**7. List of References**

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| Course Notes | Will be provided during class |
| Essential Books (Text Books) | Schaum's Outline of Programming with C, 2nd Edition, by Byron S Gottfried |
| Recommended Reference Books | Teach Yourself C, 3rd Edition, by Herbert Schildt |
| Online Resources | <http://www.tutorialspoint.com/cprogramming/>  <https://www.w3schools.in/c-tutorial/> |

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| **Facilities Required for Teaching and Learning** |

**Course Policies and Procedures**

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| **Appendix-1: Program Learning Outcome (PLO)**   |  |  | | --- | --- | | **No.** | **PLO** | | 1. | **Engineering Knowledge** | | 2. | **Problem Analysis** | | 3. | **Design/Development of Solutions** | | 4. | **Investigation** | | 5. | **Modern Tool Usage** | | 6. | **The Engineer and Society** | | 7. | **Environment and Sustainability** | | 8. | **Ethics** | | 9. | **Communication** | | 10. | **Individual and Team Work** | | 11. | **Life Long Learning** | | 12. | **Project Management and Finance** |   **Generic Skills (Detailed):**   1. **Engineering Knowledge (T)** -Apply knowledge of mathematics, sciences, engineering fundamentals and manufacturing engineering to the solution of complex engineering problems; 2. **Problem Analysis (T)** – Identify, formulate, research relevant literature and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences; 3. **Design/Development of Solutions (A)** –Design solutions, exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues. 4. **Investigation (D)** Conduct investigation into complex problems, displaying creativeness, using research-based knowledge, and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions; 5. **Modern Tool Usage (A & D)** -Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations; 6. **The Engineer and Society (ESSE)** -Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices. 7. **Environment and Sustainability (ESSE)** -Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development; 8. **Ethics (ESSE)** –Apply professional ethics with Islamic values and commit to responsibilities and norms of professional engineering code of practices. 9. **Communication (S)** -Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions; 10. **Individual and Team Work (S)** -Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings. 11. **Life Long Learning (S)** -Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. 12. **Project Management and Finance (S)** -Demonstrate knowledge and understanding of engineering management and financial principles and apply these to one’s own work, as a member and/or leader in a team, to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship. | | |
| .................................................................................................  *Course Coordinator/ Teacher*  Date: |  | .................................................................................................  *Head of the Department*  Date: |